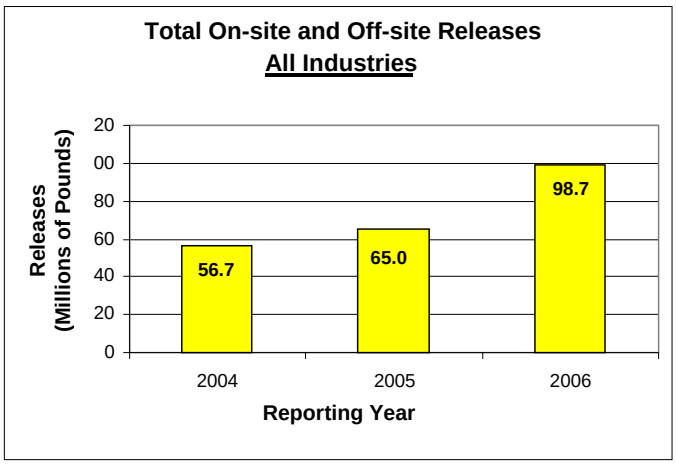
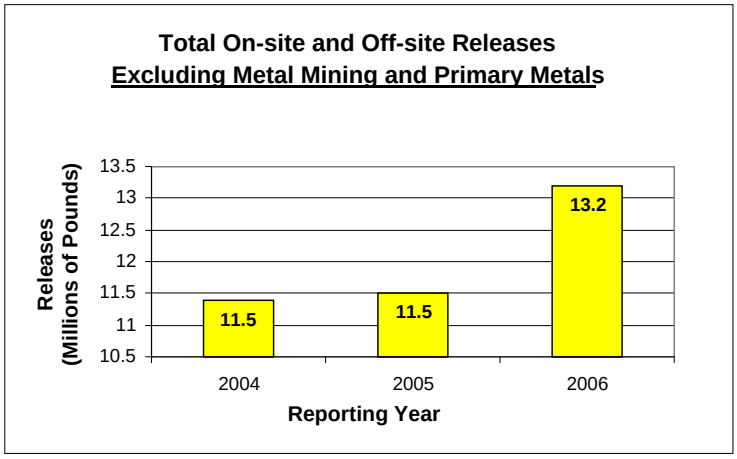
Arizona Report: Toxics Release Inventory
2006 Reporting Year

U.S. EPA Region 9
Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations

-- March 08

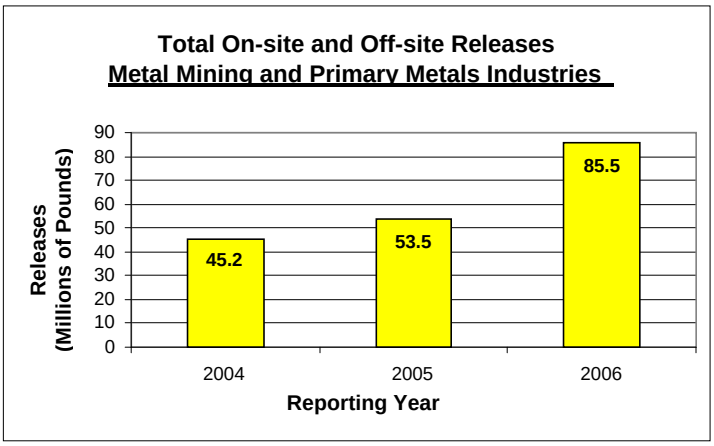
Trends in Toxic Chemical Releases for 2004 – 2006*





Total Releases for Reporting Years 2004-2006

Year	Air	Land	Under-ground Injection	Water	Off-Site
2004	4,387,451	51,401,547	0	918	899,241
2005	4,333,382	59,571,390	0	6,353	1,102,095
2006	4,516,582	91,057,858	0	688,516	2,445,807



The 2006 Public Data Release

EPA has made public the 2006 data on toxic chemicals that were released to Arizona's air, water and land. This information comes from the Toxics Release Inventory (TRI), a federal community right-to-know program. In Arizona, 318 facilities reported a total of 98.7 million pounds of toxic chemical releases.

Facilities that meet certain criteria must report the amounts of toxic chemicals disposed of or otherwise released on-site to air, water, land and injected underground and the amounts of chemicals transferred off-site for disposal or release. Off-site disposal or release can include land disposal at permitted hazardous waste facilities.**

** Year to year data comparisons do not reflect changes in reporting requirements.*
*** No adjustments were made to account for double counting that could occur as a result of off-site transfers of some TRI facilities also being reported as on-site releases at permitted hazardous waste landfills and other TRI facilities that receive the on-site transfers.*

The data does not indicate whether a facility is violating environmental laws. Many of the facilities reporting under this program are subject to state and federal regulations designed to protect human health and the environment. For instance, Resource Conservation and Recovery Act (RCRA) Subtitle C Landfills, a type of permitted hazardous waste facility, must comply with stringent requirements for liners, leak detection systems, and groundwater monitoring. Disposal in underground injection wells is regulated by EPA's Underground Injection Control Program, which provides safeguards so that injection wells do not endanger current and future underground sources of drinking water.

Releases and Risk

Release is defined as the amount of a toxic chemical released on-site (to air, water, underground injection, landfills, and other land disposal), and the amount transferred off-site for disposal.

It is important to note that a release should not be directly equated with risk. To evaluate risk, release data must be combined with information about site-specific conditions, exposure, and chemical toxicity. TRI chemicals vary widely in toxicity. High volume releases of less toxic chemicals may pose less environmental risk than lower volume releases of highly toxic chemicals. Increases in on-site releases at permitted hazardous waste facilities may indicate a reduction in risk.

Industries

A facility is subject to TRI reporting requirements if it: has 10 or more full-time employees (or the equivalent 20,000 hours per year); is classified under a reportable North American Industrial Classification System (NAICS) code; and manufactures, processes, or otherwise uses any of the listed toxic chemicals in amounts greater than the threshold quantities. For most chemicals (excluding Persistent Bioaccumulative and Toxic (PBT) chemicals) the thresholds are 25,000 pounds for chemicals or chemical compounds manufactured or processed, and 10,000 pounds for those otherwise used.

Manufacturing industries have been reporting their releases since 1987, and federal facilities started reporting in 1994. In 1998, an additional seven industry sectors began reporting their toxic chemical releases for the first time. These sectors are metal and coal mining, electricity generation, commercial hazardous waste treatment, solvent recovery, petroleum bulk terminals, and wholesale chemical distributors.

Arizona's Releases

In 2006, Arizona facilities reported a 52% increase in total releases, nearly 33.7 million pounds. The increase was primarily due to a reported increase of 53%, or 31 million pounds, in on-site land releases. Metal mining and primary metal facilities make up 87% of total on-site and off-site releases and have reported a 60% increase in total releases (32 million pounds). The copper mines are primarily responsible for this increase. In particular, Phelps Dodge Miami Inc. reported a 33 million pound increase in total on-site and offsite releases in 2006 compared to 2005.

Many mines extract, move, store, process, and dispose of large amounts of waste rock and ore, materials which often contain low concentrations of naturally occurring metals. The vast majority of this material is placed in surface impoundments or on the land, and the metals are reported as on-site releases to land.

Air releases in Arizona increased 4% (183 thousand pounds), and there was an increase of 10,738% (682 thousand pounds) in water releases. Off-site releases increased by 1.3 million pounds, a 122% increase.

Facilities that were not in the metal mining and primary metal industries reported a 14% increase in total on-site and off-site releases (1.6 million pounds) in 2006. While there was an increase in the total releases for these facilities, there was a decrease in total air releases of 70 thousand pounds.

Persistent, Bioaccumulative, and Toxic Chemicals

In the year 2000, TRI was expanded to include additional Persistent Bioaccumulative and Toxic (PBT) chemicals and to require reporting for these chemicals at lower thresholds, ranging from 0.1 grams to 100 pounds. PBT pollutants are toxic chemicals that persist in the environment and bioaccumulate in food chains, posing risks to human health and ecosystems. In Arizona, nearly 16 million pounds of total on-site and off-site releases of PBT chemicals were reported. This is a 136% increase over 2005. The reported increase in lead and lead compounds and mercury and mercury compounds were primarily responsible for this change.

PBT Chemical Releases

Releases of persistent, bioaccumulative and toxic (PBT) chemicals in pounds Dioxin and dioxin-like compounds data are not in Toxicity Equivalence (TEQ).

Chemical	Total On- and Off-Site Releases		Percent Change
	2005	2006	
Lead and Lead Compounds (in pounds)	6,605,083	15,553,503	135%
Mercury and Mercury Compounds (in pounds)	4,844	130,099	2,586%
Polychlorinated Biphenyls (PCBs) (in pounds)	68,627	71,266	4%
Polycyclic Aromatic Compounds (PACs) (in pounds)	1,159	543	-53%
Chlordane	0	1	--
Benzo (G,H, I) Perylene (in pounds)	1.098	0.587	-47%
Tetrabromobisphenol A (in pounds)	0	0	---
Dioxin and Dioxin-like Compounds (in grams)	16.0	14.0	-12%

In determining release quantities for metal compounds, facilities only consider the primary metal portion of the compound. For instance, a facility reporting for lead compounds only reports the lead portion of the lead compounds released. Hence, the table above gives combined values for lead and lead compound releases and mercury and mercury compound releases. The PBT chemicals are ranked by 2006 total releases. The data is in pounds for all chemicals except dioxin and dioxin compounds, which is in grams.

Lead and Lead Compounds

Starting in the year 2001, lead and lead compounds were reported as Persistent Bioaccumulative and Toxic (PBT) chemicals. While lead and lead compounds have been on the list of reportable chemicals since 1987, for the year 2001 the reporting threshold was drastically lowered (from 25,000 pounds manufactured or processed, and 10,000 pounds otherwise used to 100 pounds manufactured, processed or otherwise used). As a result, additional facilities are required to report releases of lead and lead compounds.

An 8.9 million thousand pound increase in reported lead releases drove the increase in PBT releases in 2006. Almost 16 million pounds of total on-site and off-site releases of lead were released in Arizona. Approximately 98 percent of lead releases were from on-site land disposal at metal mining and primary metal facilities. Largest releases in lead came from the following facilities: Phelps Dodge Miami Inc. with 8 million pounds; ASARCO LLC Mission Complex with 2.7 million pounds; and ASARCO LLC Ray Operations Mine with 1.5 million pounds.

Mercury and Mercury Compounds

There was a 2,586% (125 thousand pounds) reported increase in total releases of mercury. This change was primarily driven by an increase in total on- and off-site releases of mercury compounds reported by Phelps Dodge Miami Inc.

There was a 17% or 322 pound decrease in mercury air releases in 2006.

Dioxin and Dioxin-like Compounds

Total releases of dioxin and dioxin-like compounds decreased by nearly 2 grams, or 12%, in 2006. The largest contributing factor to this decrease occurred at Imsamet of Arizona.

Facilities Releasing Largest Quantities of Chemicals

The top ten facilities in Arizona for total on-site and off-site releases of all chemicals are:

1. Phelps Dodge Miami Inc. (Claypool, Gila County) with 59.6 million pounds.
2. ASARCO LLC Ray Complex/Hayden Smelter & Concentrator (Hayden, Gila County) with 14.9 million pounds.
3. Cholla Power Plant (Joseph City, Navajo County) with 3.5 million pounds.
4. Tucson Electric Power Co. Springerville Generating Station (Springerville, Apache County) with 3.4 million pounds.
5. ASARCO LLC Mission Complex (Sahuarita, Pima County) with 3.3 million pounds.
6. Phelps Dodge Bagdad Inc. (Bagdad, Yavapai County) with 2.8 million pounds.
7. Phelps Dodge Sierrita Inc. (Green Valley, Pima County) with 1.9 million pounds.
8. ASARCO LLC Ray Operations Mine (Kearny, Pinal County) with 1.8 million pounds.
9. Salt River Project Navajo Generating Station (Page, Coconino County) with 1.5 million pounds.
10. Coronado Generating Station (St. Johns, Apache County) with 1.1 million pounds.

The top ten facilities in Arizona for total on-site and off-site releases of PBT chemicals are:

1. Phelps Dodge Miami Inc. (Claypool, Gila County) with 8.1 million pounds.
2. ASARCO LLC Mission Complex (Sahuarita, Pima County) with 2.7 million pounds.
3. ASARCO LLC Ray Complex/Hayden Smelter & Concentrator (Hayden, Gila County) with 1.5 million pounds.
4. ASARCO LLC Ray Operations Mine (Kearny, Pinal County) with 1.2 million pounds.
5. Phelps Dodge Sierrita Inc. (Green Valley, Pima County) with 927 thousand pounds.
6. Phelps Dodge Bagdad Inc. (Bagdad, Yavapai County) with 648 thousand pounds.
7. Phelps Dodge Morenci Inc. (Morenci, Greenlee County) with 191 thousand pounds.
8. Romic Environmental Technologies Co. (Chandler, Maricopa County) with 92 thousand pounds.
9. Earth Protection Services Inc. (Phoenix, Maricopa County) with 70 thousand pounds.
10. Tucson Electric Power Co. Springerville Generating Station (Springerville, Apache County) with 63 thousand pounds.

On-line Access

For national information on data releases, see:
http://www.epa.gov/tri

The TRI data is available through Envirofacts Warehouse, EPA's internet site for distributing environmental information at:
http://www.epa.gov/enviro

or the TRI Explorer tool:
http://www.epa.gov/triexplorer

For general information on the Toxics Release Inventory, including reporting requirements for businesses, go to:
http://www.epa.gov/region09/toxic/tri

For additional information on dioxin, go to:
http://www.epa.gov/ncea/dioxin.htm

For more information on the EPA's PBT Chemicals Program, go to:
http://www.epa.gov/opptintr/pbt/

Information and Assistance

Region 9 staff will answer questions and assist you in learning more about the TRI Program in Region 9.

U.S. EPA Region 9, TRI Program
Nancy Levin, (415) 972-3848
Mariela Lopez, (415) 972-3771